


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

77 West Jackson Boulevard
Chicago, Illinois 60604

DATE: **APR 26 2013**

SUBJECT: INSPECTION REPORT - The Swan Corporation, Centralia, IL

FROM: Katie Owens, Environmental Engineer
Air Enforcement and Compliance Assurance Section, (IL/IN)

THRU: Nathan A. Frank, Chief 
Air Enforcement and Compliance Assurance Section, (IL/IN)

TO: File

Date of Inspection: June 14, 2012

Attendees: Katie Owens, Environmental Engineer, USEPA
Natalie Topinka, Environmental Scientist, USEPA
Deb Holle, Environmental Health & Safety Coordinator, Swan
Kevin Kuhnke, Senior Plant Engineer, Swan
Kenny Buonaura, Plant Manager, Swan
Gene Schmittgens, Attorney, Swan (via phone)

Purpose of Inspection: The purpose of conducting an inspection of The Swan Corporation (Swan) was to follow up on the compliance status, following alleged 2006 violations, with its Title V permit and current operations after referral from Illinois Environmental Protection Agency (IEPA) and subsequent 114 issuance. Inspection of Swan's facility was necessary to determine compliance after IEPA issued an additional Violation Notice to Swan in March 2011, alleging violations with the National Emission Standards for Hazardous Air Pollutants for Reinforced Plastic Composites Production at 40 C.F.R. Part 63, Subpart WWWW.

Company Description and Background:

Location: 200 Swan Avenue, Centralia, Illinois 62801

Primary Contact: Kevin Kuhnke, Senior Plant Engineer

The Swan Corporation manufactures compression-molded fiberglass products such as sink tops, bathtub surrounds, vanities and countertops.

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Opening Discussion

Natalie Topinka and I arrived at the facility at 8:48 am. From Swan's parking lot Ms. Topinka and I both noted a strong, offensive resin-like smell. Ms. Topinka and I entered the facility, via the employee cafeteria, at 9:54 am. Ms. Topinka presented her credentials and asked an employee for the Plant Manager or Environmental Control Manager. Ms. Topinka and I waited in the employee cafeteria and were shortly greeted by Deb Holle, Swan's Environmental Health & Safety Coordinator. Ms. Holle brought us to the main entrance, routing us to the conference room to begin the opening discussion at 9:02 am. Kevin Kuhnke, Senior Plant Engineer, and Kenny Buonauro, Plant Manager, joined for the opening discussion.

Facility Overview

After introductions and explanations for our unannounced visit, Ms. Topinka asked for the Swan representatives to provide general company information. Swan representatives stated that Swan has been at this site since 1964 with approximately 25 expansions since 1981. Swan is approximately 300,000 square feet. Swan purchased hydraulic presses in the early 1970's and began the TMC process in the late 1970's. Swan began with 5 presses and now maintains 23 presses, though four more were added in 2004. Approximately 90% of Swan's processes involve the TMC/BMC material, while the remaining 10% involve painting operations. The Swan Corporation has approximately 175 employees with two 10-hour shifts, 4 days per week, with some overtime on Fridays. Swan's second shift is for cleaning.

Ms. Topinka asked for an overview of the processes at Swan. Note that process details contained in this section were obtained through the opening discussion and a written narrative provided in the closing discussion. Swan produces kitchen and bath products using gravity and hydraulic presses, and match metal dies, with both BMC and TMC.

Swan representative stated that the moldings are produced from one of two processes; BMC or TMC: two unique processes using the same liquid dispersion. The liquid dispersion contains unsaturated polyester resin and additives, including polystyrene low-profile (liquid), calcium, alumina tri-hydrate (ATH) filler, calcium carbonate filler, and colorants. Swan has 100,000 lb silos for storage of calcium carbonate and ATH.

The process begins in the Mix Room where approximately 49 colors (3 TMC colors and 46 BMC colors) are produced. Colorants are stored in 5 gallon buckets, while other additives are stored in 50 lb bags. An automated system weights out the colorant for each batch of compound as specified in product orders. Each batch is typically 3,000 lbs. Three mixers are used in this process for high speed dispersion within the compound. The batch is then heated to 90°F for 30 minutes. Once the mix has the correct thickness, a portion of the batch is taken as a lab sample. The lab verifies the viscosity and other quality assurance/quality control parameters (color, curing properties, temperature, etc). Once the lab finds the sample acceptable, the liquid dispersion is used for the BMC or TMC process.

Swan has two TMC machines, the 'North' and 'South' machines. The TMC process begins by mixing the liquid dispersion with magnesium oxide, to thicken the liquid dispersion before feeding it into the TMC machine. Next, this paste is fed through steel rollers prior to the addition of chopped fiberglass. The fiberglass reinforced sheets are then fed through polyethylene sheets (one on either side) via other steel rollers and then chopped into squares, stacked in vessels and stored for curing. The TMC is stored for 1-2 days for proper thickening.

The BMC process begins with the liquid dispersion which is blended with fiberglass in one of four BMC mixers. The end product, a mixture of the liquid dispersion and fiberglass, resembles cotton candy. The BMC is used immediately (typically within 20 minutes). Both products, TMC and BMC, are stored in metal containers in the block storage room between 70° and 74° F. Swan relayed that the storage room for the BMC (BMC is stored for a much shorter period of time) and TMC has air conditioning but not exhaust. An exhaust system is present in the mixing area with secondary carbon filtration. Carbon filters are used in the TMC and BMC process. Swan representatives did not state what the carbon filtration was specifically intended to capture.

Depending on the order, the cured TMC or BMC is routed for molding. The molding process takes approximately 1 to 10 minutes depending on the product, at approximately 280° - 300°F. There are two types of heated molding processes at Swan: gravity molding, where the top drops onto the mold and compound; and hydraulic molding, where the molding compound is pressed into the dies.

Swan representatives stated that dust collectors and baghouse filters are used throughout the plant with down draft filters.

Swan representatives stated that once Swan receives a customer order, the plant schedules the appropriate manufacturing equipment and material required for the order. After the equipment and material has been scheduled, the operators have specific processes to follow including trimming, finishing and boxing for shipping. The order is either sent through the TMC or BMC process.

Swan representatives stated that painting is performed after molding and sanded with fine sandpaper for paint adhesion. Swan's painting process involves 3- and 5-panel systems, painted in sets. A continual conveyor system is used in the paint shop to move the molding through the blow-off booth, paint booth and infrared oven to cure. Prior to paint application the product enters a blow-off booth to rid the products of excess fiberglass. Dust collectors (baghouse) are used to capture this dust with 99% capture efficiency. The paint shop contains a downdraft water fall system and paint oven – with primary, secondary and tertiary paint collection systems.

The paint booth is vented but contains no filtration system. Mr. Buonauro stated that all paints used in the booth have been verified for VOC content via the MSDS.

Excess paint is collected via the downdraft pools. The downdraft pools contain solutions (defoamers, coagulants, and floaters) to float the paint which is then skimmed for collection and deposited into a burlap sack. The burlap sack containing the excess paint is hung to dry near the oven for a couple of days (2 – 7), and then emptied for landfill disposal.

Painted moldings are cured in infrared ovens at 200°F. After curing, products are inspected, and those that pass proceed to be packed and shipped.

Containers of methyl ethyl ketone (MEK) are stored in the paint room for the paint line and resin booth. MEK is stored in 55 gallon drums. Swan representatives stated that 90 – 95% of the MEK is recovered for reuse. MEK is used to flush lines and clean stainless steel pipes between colors (of products). Each night 16 vessels are cleaned with MEK. Swan has a large storage area outside the building for additional storage and collection of MEK. Superior Solvents removes and disposes of the sludge.

Next in the process is the Saw Room, where Swan produces its own crating system. The saw room contains beam panel saws with dust collection for the sawdust. The products are then crated and shipped.

Grinding operations at Swan include the grinding of cured, colored polyester to produce colored speckles. There are 15 – 18 colors ground into speckles with 5 sizes of each color. A pulverizer transforms the small pieces into speckles – this operation has a baghouse filter. The pulverized colors are mixed into the product at the beginning of the process for either the BMC or TMC.

Swan produces roughly 8,000 products (line items). Swan representatives stated that production bottlenecks are caused by specialty orders including small components (multi-kit items) produced in secondary operations. Secondary operations include tub and shower walls. Both tub and shower walls are coated with urethane paint and sealed with infrared ovens.

Swan representatives stated that some of its damaged products are repaired in-house, when possible. Otherwise approximately 3% of manufactured products are landfilled. Swan representatives stated that all Swan products are food safe and Green Guard approved, meaning there are no emissions after curing. Swan tests its products every 6 months to maintain this certification.

Swan representatives stated that it has weekly environmental meetings in-house and that the revised Title V permit it applied for has not been issued. Swan's attorney, Gene Schmittgens, joined a portion of the opening discussion via phone and relayed that Swan will submit information required by IEPA to resolve the outstanding VN.

Facility Tour

After wrapping up the opening discussion, Ms. Topinka and I requested a schematic of the facility for use on the plant tour. Mr. Kuhnke provided a schematic of the plant and the plant tour began at 9:30 am. All parties from the opening discussion left the conference room to begin the tour. Swan representatives requested we tour the facility with hard hats, steel toed boots and protective eye wear. We entered the plant in the Molding Department and walked through the TMC process room (labeled FMC Room on the plant schematic) into the Bulk Resin Tank Storage Room (see photo

1). Immediately upon entering the Bulk Resin Tank Storage Room I noted a very strong, displeasing resin odor. We exited the Resin Tank Storage Room to view additional storage silos (powdered resin) just outside the Mix Room.

We reentered the building in the Mix Room where the liquid dispersion is mixed for both the BMC and TMC in 3 mixers (see photo 4). The mixers were recently modified to include mixing covers to fully enclose the mixers (see photo 3). Swan representatives stated that carbon filtration is used in the Mix Room as a control device (see photo 2). Ms. Topinka and I observed the following process while in the Mix Room: the liquid dispersion mixture was removed from the batch vessels and transported to either the BMC mixers for processing or the TMC Room for the TMC process. For the BMC process, the mix was carried via forklift to the BMC mixer (see photo 6) where it was combined with fiberglass before being loaded into a plastic bag lined tote (see photo 5). After Ms. Topinka and I observed the BMC process, we proceeded toward the TMC Room. While exiting the Mix Room, Ms. Topinka noted an uncovered mixing vessel (photos 7 and 8) and inquired if this was typical of Swan's operations. Swan representatives replied that normally caps (similar to large shower caps) are used to cover the mixing vessels during transport. Since this vessel was about to be cleaned, it didn't have the cap on it. Ms. Topinka and I noted the pink caps on the ground next to the mixing vessel.

Next on the tour was the TMC Room where the TMC process occurs. I noted that the resin odor in this area was very concentrated. Two TMC machines were present, though only Machine #1, the south TMC machine, was in use. Ms. Topinka and I walked around the uncovered TMC mixing vessel and the TMC process line (photos 9 and 10) to observe the process closely. Ms. Topinka and I observed long strands of fiberglass fed into the TMC machine, chopped and mixed with the TMC paste. The wet paste was fed through two steel rolls, moving in opposite directions; and layered between clear, plastic sheets; divided into square sections and layered in a bin for storage in the curing room. Ms. Topinka inquired about the bucket of TMC compound and open valve. Swan representatives replied that this is used for sampling the TMC mix (see photo 11). From the TMC Room we proceeded to the Hot Room where both TMC and BMC are cured.

I noted that The Hot Room had a moderate resin smell. The room felt as expected (71° - 75°F) based on what was communicated during the opening discussion. I observed that The Hot room had two garage doors which were only open when product was deposited or removed from the Hot Room. Next, we proceeded to the lab where Swan tests the liquid dispersion (the base ingredient for both the BMC and TMC) for consistency (viscosity, color, curing properties and temperature) prior to continuing its respective process (BMC or TMC). I noted a very strong odor in the lab, similar in strength to the Bulk Resin Tank Storage Room. The lab also had samples of each color product it produces on display.

From the lab we were led to one of the TMC molding process areas where Ms. Topinka and I observed sinks being molded with heated gravity presses. Small pieces of the TMC product were cut from the larger, cured, TMC sheets and placed inside the bottom of the sink mold die. The press was lowered into the sink die and a few minutes later a completed sink was removed.

From the gravity press area we proceeded to the boiler room. Swan has three boilers onsite, two 80 HP and one 150 HP boilers, both natural gas powered. The 150 HP boiler was installed in 2004. Continuing on from the boilers we observed the continuous mat molding process line which joins layers of the compound with adhesive applied by an automated adhesive dispersion system (see photo 13 and 14). Next, the joined layers move to heated hydraulic presses, where the compound is pressed upward into the dies for molding. Swan representatives stated that vanities and countertops are made using this process. The molded product is sanded by hand on one of several sanding stations. Throughout this area dust collectors are used for the dust collection created during the sanding process (see photo 15).

After Ms. Topinka and I observed the dusting process from the continuous mat molding product line, we proceeded to the Packing Line, where I noted little to no odor. We walked through the Packing Line to the Touch Up Area and continued toward the paint booths that begin the Paint Room (see photo 16). Ms. Topinka and I first observed the water curtain in the Paint Room (see photo 17). The Paint Room was not in operation during the inspection. Swan representatives stated that painting occurs roughly every other day. I noted that the basin of water at the foot of the dry water curtain was green. Ms. Topinka asked about the contents of the water basin, specifically what chemicals were added to reclaim the paint. The Material Data Safety Sheets (MSDS) were not readily available upon request, though some of the requested information was later obtained by a Swan representative during the plant tour from the storage room directly behind the infrared oven. I noted a heavy odor in the Paint Room even though it was not in operation during the time of the tour. I also noted in the Paint Room two paint drums, a MEK drum, and a burlap bag for reclaimed paint to dry prior to disposal (see photo 18). The infrared curing oven was L-shaped and also not in operation during the tour (see photo 19).

From the Paint Room we proceeded to the Saw Room where shipping crates are created for Swan products. Continuing on, we proceed through the Special Orders room; where custom orders are filled; and walk outside to view the large MEK storage tank which had a strong pickled smell. The two large tanks, one currently holding MEK and one which formerly held n-butyl acetate were gated (see photo 20). I observed smaller containers stored in the same area as the MEK storage tank, on wood pallets.

We continued the tour by walking through the receiving area before moving on to the Shipping Department. From the Shipping Department we were led to the Chip Room where color chips are produced on a grinder (see photo 21). Swan representatives advised Ms. Topinka and I not to venture close to the grinder since it was a very loud machine. We viewed the various sample colors and sizes in bins located adjacent to the grinder. The Chip Room was the last room on the tour.

The plant tour ended at 11:32 am.

Closing Discussion

The closing discussion began at 11:35 am with Ms. Topinka, Ms. Owens, Ms. Holle, Mr. Kuhnke, and Mr. Buonauro in attendance. Mr. Kuhnke stated that Swan has a plant tour narrative that may be helpful. Mr. Kuhnke provided a copy of the narrative to both inspectors. Ms. Topinka inquired

about Swan's method of cooling its facility. Swan representatives stated that Swan has two 50 Ton air conditioning units to cool the Cure Room. Swan stated that RMJ (of Salem, IL) performs the air conditioning maintenance. Swan also has a cooling tower onsite. Ms. Topinka inquired about the chemicals used in the cooling tower. After attempting to locate this information from another worker onsite, Mr. Kuhnke said he would locate the list of chemicals used in the cooling tower and send them to Ms. Topinka.

Swan requested that we email a copy of the photos taken during the tour to Deb Holle. Ms. Topinka stated she would send a CD with the photos and communicated the next steps; that we would return to the office, create the inspection report and that there is a possibility of issuing a 114 (information request).

Swan representatives explained that the production equipment at Swan is divided into groups, and each group is permitted as an emission unit. In Swan's recent Title V renewal application, Swan requested that several pieces of equipment be reorganized into different emission unit groups. Ms. Topinka inquired about this request to regroup the emissions units in the permit renewal. Mr. Buonauro commented that he was unsure of the reason for regrouping the emissions units and that we should ask Swan's environmental consultant for clarification, but that he understood that regrouping the units would likely ensure Swan maintained compliance with emission limits.

Ms. Topinka and I explained that the inspection report would be available to the company under FOIA, and asked if Swan would like to claim any of the information discussed as confidential business information (CBI). Swan representatives declined to claim anything as CBI. Shortly after thanking everyone for their time, we departed Swan.

Photos



Photo 1: Liquid Resin Tank Storage Room – overwhelming unpleasant odor.



Photo 2: Ducting to carbon filtration system in Mixing Room.



Photo 3: Mixing Room showing mixers with new mixer covers.



Photo 4: Mixer cleaner, showing MEK storage tank and 55-gal. drums to store MEK sludge.

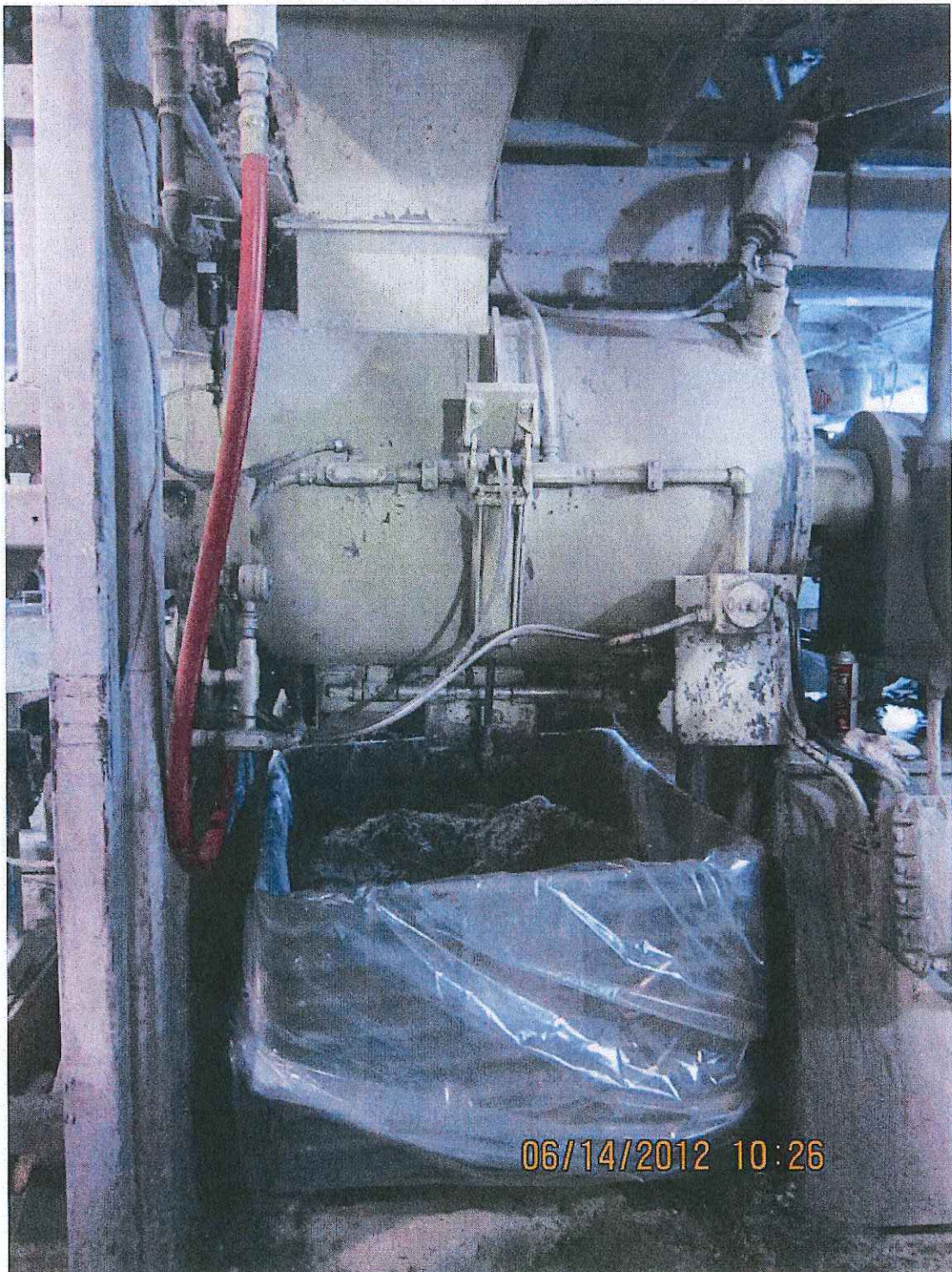


Photo 5: A BMC mixer, showing BMC loaded into the plastic bag lined-tote for curing.



Photo 6: A mixing vessel above the BMC mixer in the Mixing Room.



Photo 7: An uncovered mixing vessel awaiting cleaning in the Mixing Room, containing residual mix (liquid dispersion) in the vessel. Swan stated that this is what each vessel looks like prior to cleaning since they can't retrieve the entire product from the bottom.

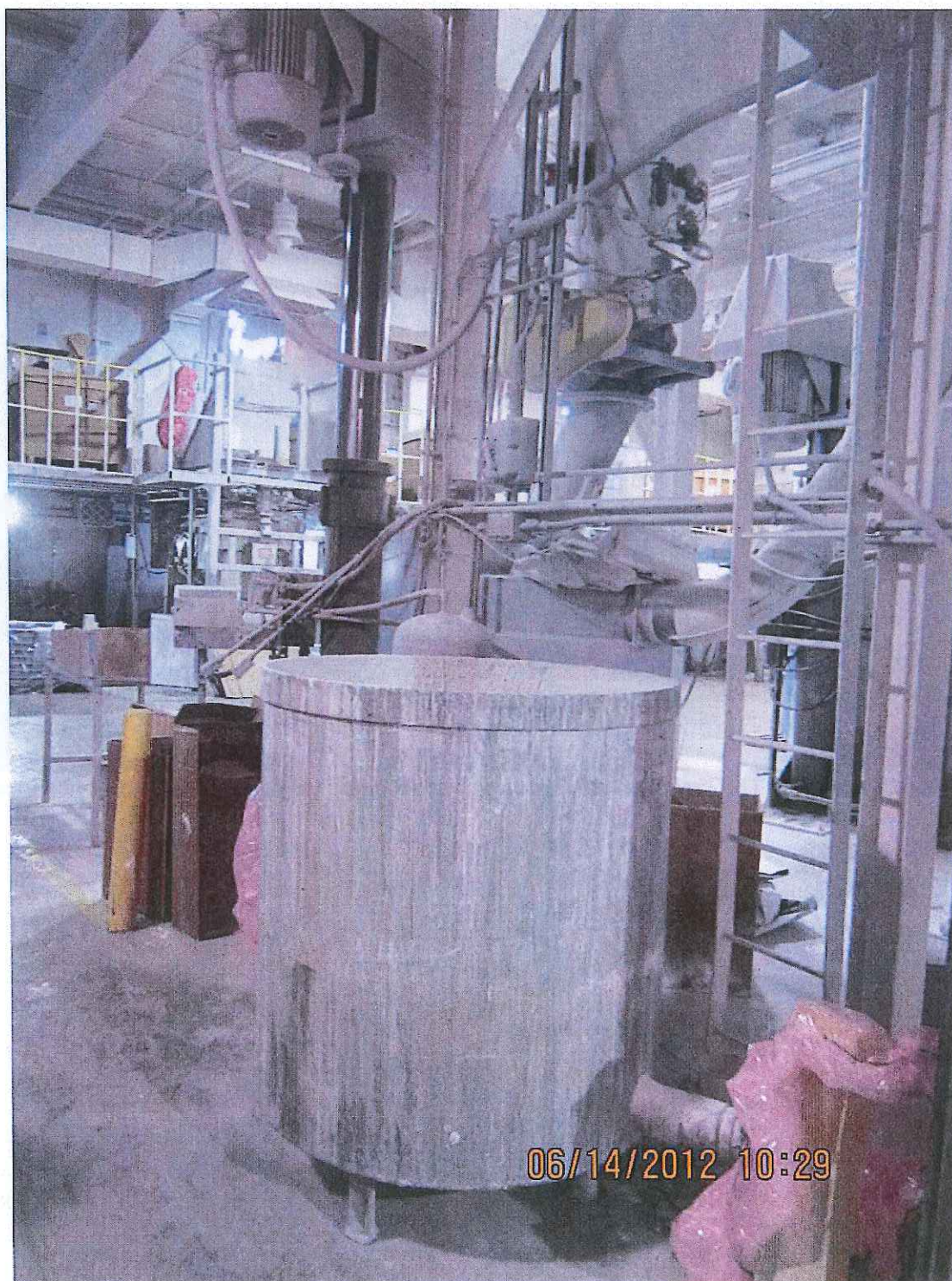


Photo 8: Wide-angle shot of uncovered mixing vessel (see photo 7) waiting to be cleaned.



Photo 9: Uncovered TMC mixing vessel pouring into an open weigh hopper in the TMC process line.

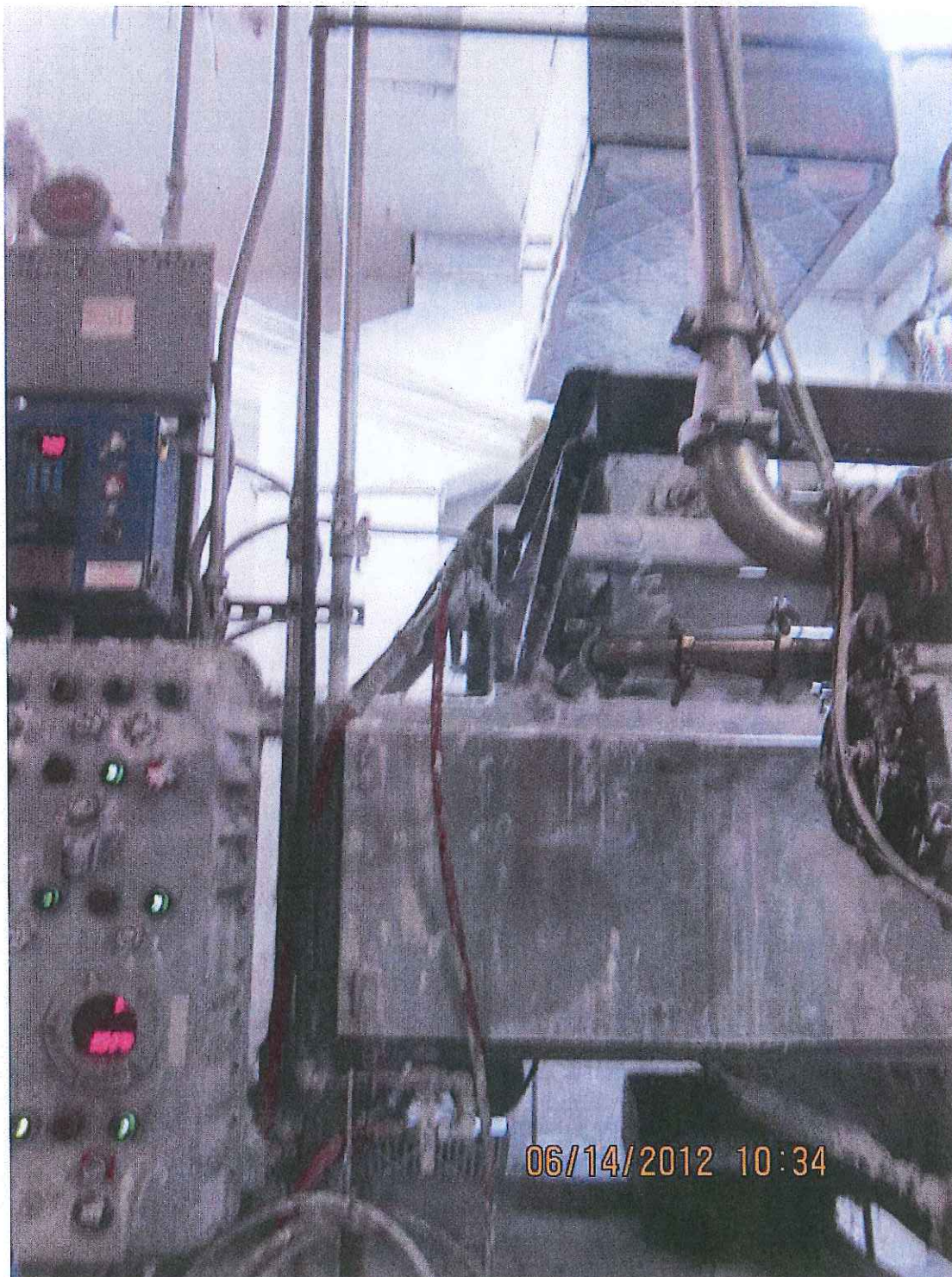


Photo 10: Fiberglass strands and chopper/spray section of the TMC process line. Note the filter over the TMC process line.

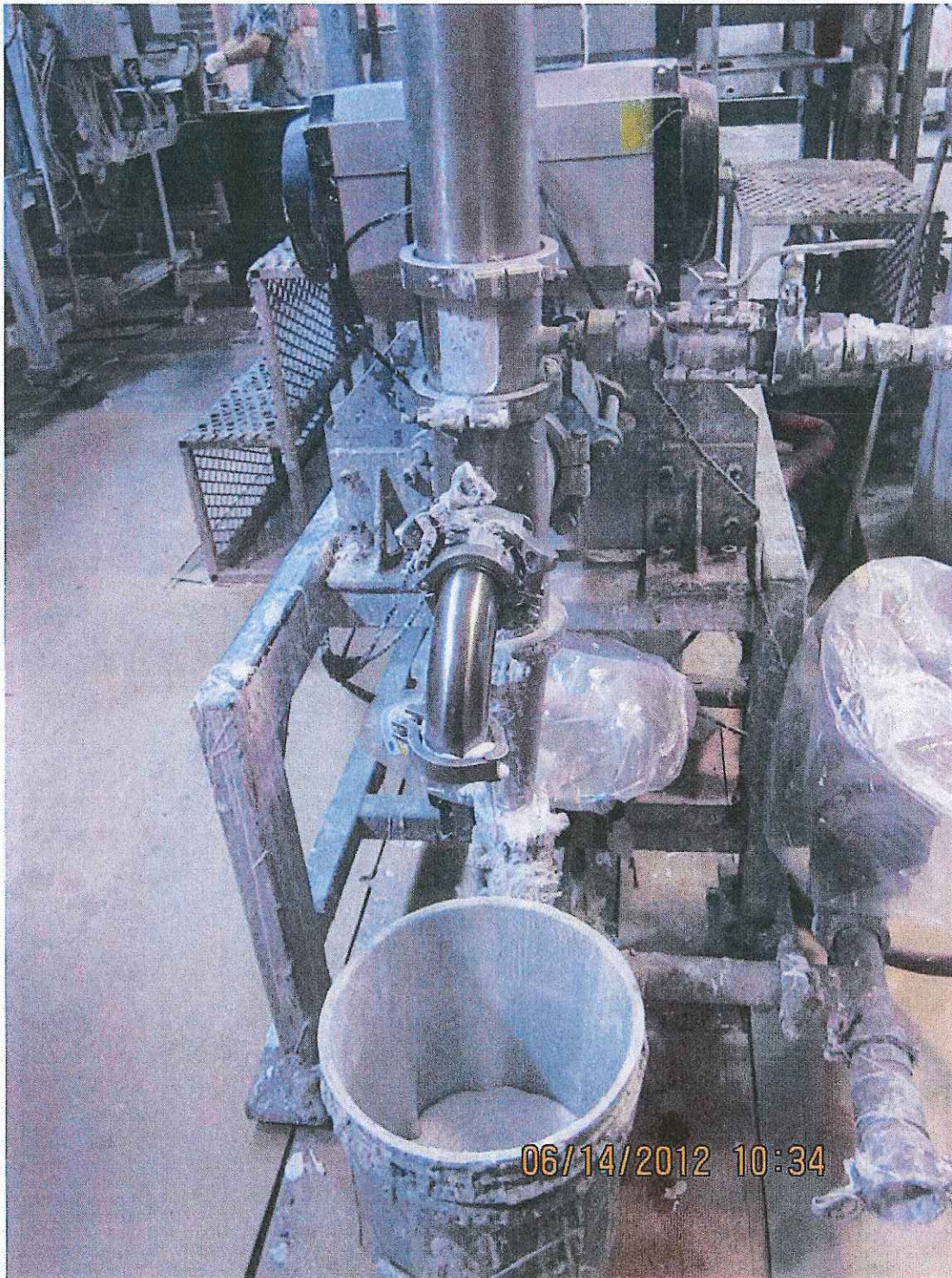


Photo 11: Open valve from the TMC compound open weigh hopper.



Photo 12: The 'Hot Room' for curing TMC and BMC.

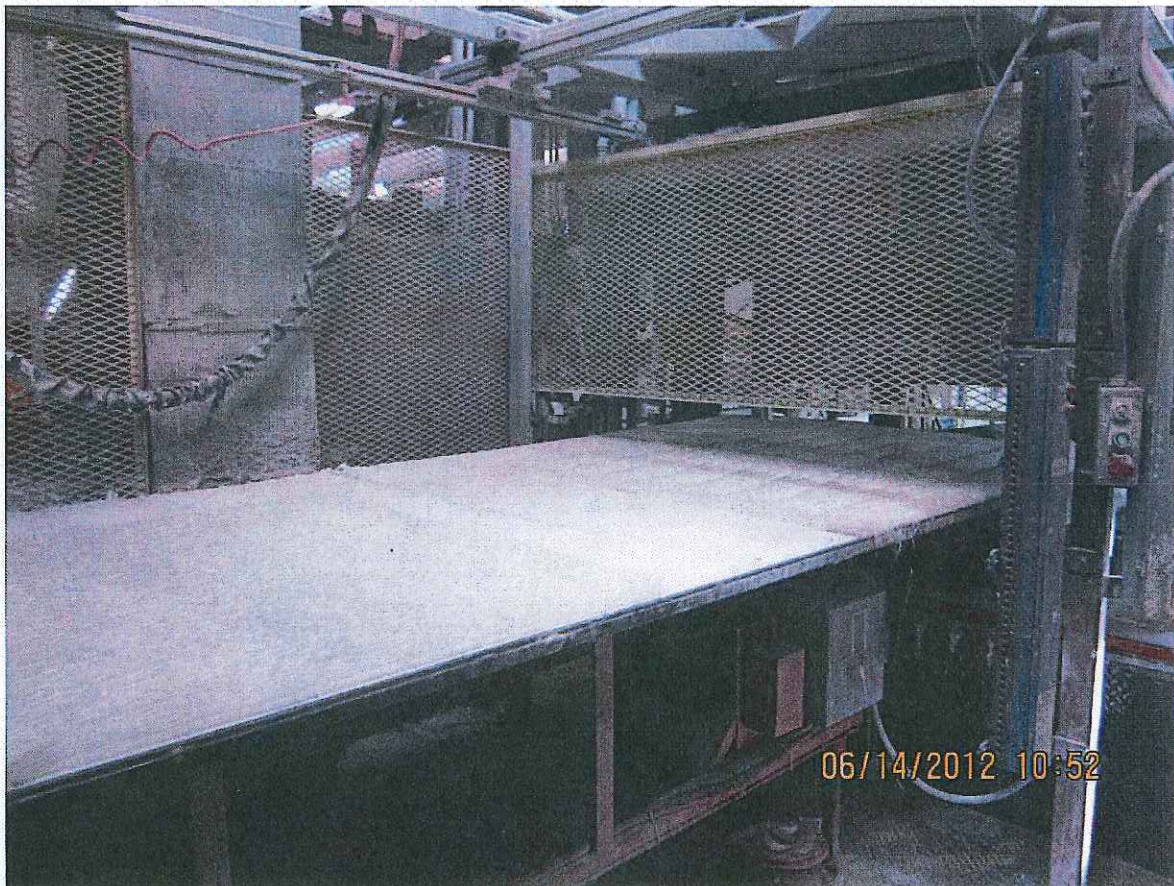


Photo 13: The continuous mat molding process line. This joins layers of TMC together using an adhesive.



Photo 14: Air exhaust fan directly above location of photo 13.



Photo 15: One of Swan's Torit dust collectors. This Torit is situated in the Molding Department.



Photo 16: Dust blow-off booth at the beginning of the Paint Line.



Photo 17: Water curtain paint spray booth with water basin for paint recycling and collection.

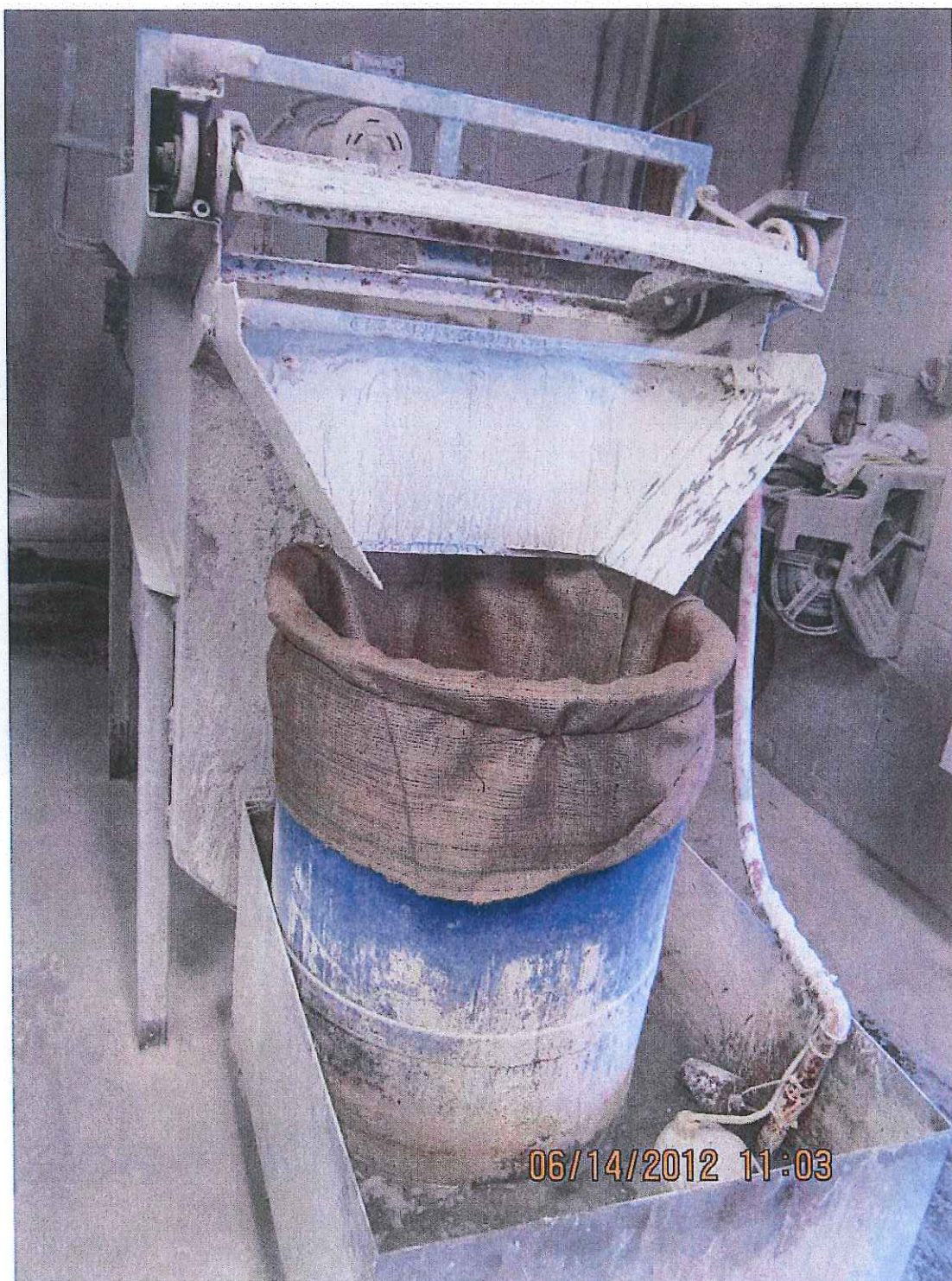


Photo 18: Paint drying apparatus. Skimmed paint is deposited into this burlap sack for 2 – 7 days to dry before disposal into a landfill.



Photo 19: Infrared curing ovens for painted panels.



Photo 20: Hazardous waste storage area. One storage tank contains MEK, the other tank formerly held n-butyl acetate.

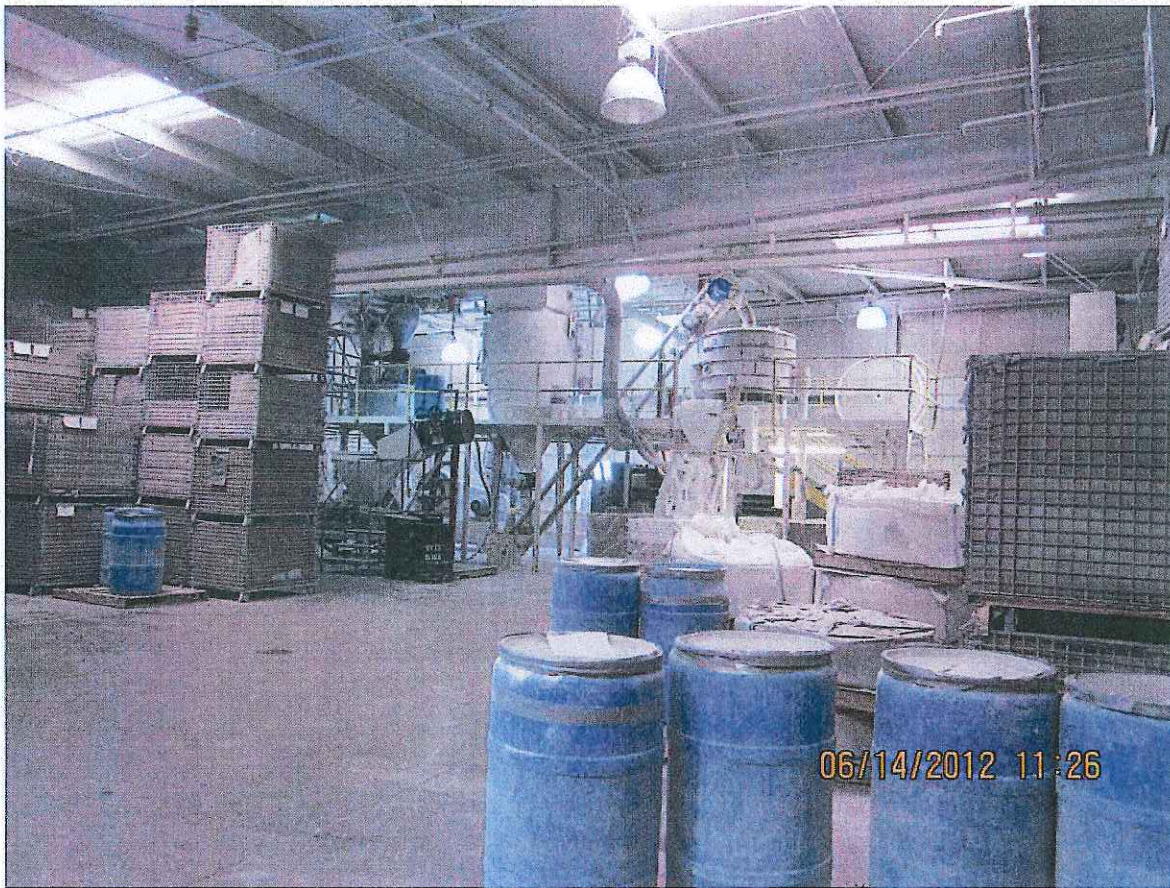


Photo 21: The Chip Room for resin chip grinding operations.

Standard bcc:s: official file copy w/attachment (s)
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 originating organization reading file w/attachment (s)

other bcc's:

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